

**CLAIMS**

1. A method for calibrating at least one or more amplifiers (100,200),  
c h a r a c t e r i s e d i n:  
5 i) generating a noise signal ( $N_a+N_i$ ) produced by said one or more amplifiers (100,200) when no input signal ( $S_i+N_i$ ) is connected (Alt. 2) to at least one amplifier of said one or more amplifiers (100,200);  
10 ii) using said noise signal ( $N_a+N_i$ ) as a calibrating signal for estimating a corresponding gain (G) of said one or more amplifiers (100,200) by measuring (600) at least one output of said one or more amplifiers (100,200) the amount of noise ( $S_{tot}$ ) of said one or more amplifiers (100,200).
- 15 2. A method for calibrating at least one or more amplifiers (100,200) according to claim 1,  
c h a r a c t e r i s e d i n t h a t f u r t h e r i s s a i d g a i n (G) adjusted in accordance with said calibrating signal.
- 20 3. A method for calibrating a receiver (1,2),  
c h a r a c t e r i s e d i n:  
25 i) generating a noise signal ( $N_a+N_i$ ) produced by one or more amplifiers (100,200) of said receiver when an input signal ( $S_i+N_i$ ) is disconnected (Alt. 2) to said receiver;  
ii) using said noise signal ( $N_a+N_i$ ) as a calibrating signal for estimating a corresponding gain (G) of said one or more amplifiers in said receiver by measuring (600) at the output of the receiver the amount of noise ( $S_{tot}$ ) of said one or more amplifiers (100,200).
- 30 4. A method for calibrating a receiver according to claim 3,  
c h a r a c t e r i s e d i n t h a t f u r t h e r i s s a i d g a i n (G) adjusted in accordance with said calibrating signal.

5. A calibration arrangement (1,2) comprising:  
one or more amplifiers (100,200) for amplifying a radio  
signal ( $S_i+N_i$ );  
estimating means (600) for estimating a gain (G) of said  
one or more amplifiers (100,200);  
characterised in that disconnecting said  
radio signal ( $S_i+N_i$ ), while at least one amplifier of  
said one or more amplifiers (100,200) is producing a  
calibrating signal ( $N_a+N_i$ ) as a reference signal into  
said estimating means (600) for estimating said gain (G)  
of said radio signal ( $S_i+N_i$ ).
6. A calibration arrangement (1,2) comprising:  
one or more amplifiers (100,200) for amplifying a radio  
signal ( $S_i+N_i$ );  
estimating means (600) for estimating a gain (G) of said  
one or more amplifiers (100,200);  
characterised in that said calibration  
arrangement (1,2) further comprises:  
a switching means (10,30+100) for disconnecting said  
radio signal ( $S_i+N_i$ ), while at least one amplifier of  
said one or more amplifiers (100,200) is producing a  
calibrating signal ( $N_a+N_i$ ) as a reference signal into  
said estimating means (600) for estimating said gain (G)  
of said radio signal ( $S_i+N_i$ ).
7. A calibration arrangement (1,2) according to any one of  
claims 5-6,  
characterised in that said calibrating  
signal is a pure noise signal ( $N_a+N_i$ ) of at least one  
amplifier of said one or more amplifiers (100,200).
8. A calibration arrangement (2) according to any one of  
claims 5-7,  
characterised in that disconnecting said one  
or more amplifiers (100,200) from said radio signal  
( $S_i+N_i$ ) by disconnecting a power supply (500) from at

least one amplifier of said one or more amplifiers (100,200).

9. A calibration arrangement (2) according to any one of claims 6-7,

5 c h a r a c t e r i s e d in that said switching means (30+100) is disconnecting said one or more amplifiers (200) from said radio signal ( $S_i+N_i$ ) by disconnecting a power supply (500) from at least one amplifier of said one or more amplifiers (100,200).

- 10 10. A calibration arrangement (1) according to any one of claims 5-7,

c h a r a c t e r i s e d in that disconnecting said one or more amplifiers (100,200) from said radio signal ( $S_i+N_i$ ) by connecting at least one input of said one or more amplifiers (100,200) to a reference potential (20).

11. A calibration arrangement (1) according to any one of claims 6-7,

c h a r a c t e r i s e d in that said switching means (10) is disconnecting said one or more amplifiers (200) from said radio signal ( $S_i+N_i$ ) by connecting at least one input of said one or more amplifiers (100,200) to a reference potential (20).

12. A calibration arrangement (1) according to any one of claims 10-11,

25 c h a r a c t e r i s e d in that said reference potential is a resistance (20) through ground.

13. A calibration arrangement (1,2) according to any one of claims 5-12,

c h a r a c t e r i s e d in that the calibration arrangement (1,2) further comprises:

30 more than one amplifiers (100+200) in a chain for amplifying said received radio signal ( $S_i+N_i$ ).

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14. A calibration arrangement (1,2) according to any one of claims 6-7,  
characterised in that said switching means (10,30+100) is disconnecting said one or more amplifiers (100,200) from said radio signal ( $S_i+N_i$ ) by disconnecting at least one input of said one or more amplifiers (100,200) which is closest to where said radio signal ( $S_i+N_i$ ) is inputted.
15. A calibration arrangement (1,2) according to any one of claims 5-14,  
characterised in that said calibrating signal is a noise power (kTBF) from said one or more amplifiers (100,200) that comprises:  
a known Boltzman constant (k);  
a known bandwidth (B) of said noise power;  
a known noise figure of said noise power;  
a measured temperature (T) of said receiver.
16. A calibration arrangement (1,2) according to any one of claims 5-15,  
characterised in that an output from the last one of said one or more amplifiers (100,200) in a chain is connected to an analog-digital-converter (400) for converting analog signals into digital signals.
17. A calibration arrangement (1,2) according to claim 15,  
characterised in that said gain (G) of said radio signal ( $S_i+N_i$ ) is estimated from said calibrating signal ( $N_a+N_i$ ) including said noise power (kTBF) when an output signal ( $S_{tot}$ ) is measured at least one output of said one or more amplifiers (100,200).
18. A calibration arrangement (1,2) according to any one of claims 5-16,  
characterised in that said gain (G) of said radio signal ( $S_i+N_i$ ) is estimated from said calibrating

signal ( $N_a+N_i$ ) when an output signal ( $S_{tot}$ ) is measured at least one output of said one or more amplifiers (100,200).

5 19. A calibration arrangement (1,2) according to any one of claims 15-16, characterised in that said gain ( $G$ ) of said radio signal ( $S_i+N_i$ ) is estimated from said calibrating signal ( $N_a+N_i$ ) when an output signal ( $S_{tot}$ ) is measured after said analog-digital-converter (400).

10 20. A receiver (1,2) comprising:  
means (300) for receiving a radio signal ( $S_i+N_i$ );  
one or more amplifiers (100,200) for amplifying said  
received radio signal ( $S_i+N_i$ );  
15 estimating means (600) for estimating a gain ( $G$ ) of said receiver (12);  
characterised in that said receiver further comprises:  
a switching means (10,100) for disconnecting said  
received signal ( $S_i+N_i$ ), while at least one amplifier of  
20 said one or more amplifiers (100,200) is producing a calibrating signal ( $N_a+N_i$ ) as a reference signal into said estimating means (600) for estimating said gain ( $G$ ) of said radio signal ( $S_i+N_i$ ).

25 21. A receiver (1,2) according to claim 20, characterised in that said calibrating signal is a pure noise signal ( $N_a+N_i$ ) of at least one amplifier of said one or more amplifiers (100,200).

30 22. A receiver (1) according to any one of claims 20-21, characterised in that said switching means (10) is disconnecting said radio signal ( $S_i+N_i$ ) by connecting at least one input of said one or more amplifiers (100) to a reference potential (20).

23. A receiver (1) according to claim 22,  
c h a r a c t e r i s e d in that said reference  
potential is a resistance (20) through ground.
- 5 24. A receiver (2) according to any one of claims 20-21,  
c h a r a c t e r i s e d in that said switching means  
(100) is disconnecting said one or more amplifiers  
(100,200) from said radio signal ( $S_i+N_i$ ) by disconnecting  
a power supply (500) from at least one amplifier of said  
one or more amplifiers (100,200).
- 10 25. A receiver (1,2) according to any one of claims 20-24,  
c h a r a c t e r i s e d in that the receiver (1,2)  
further comprises:  
more than one amplifiers (100+200) in a chain for  
amplifying said received radio signal ( $S_i+N_i$ ).
- 15 26. A receiver (1,2) according to any one of claims 20-25,  
c h a r a c t e r i s e d in that said calibrating  
signal is a noise power ( $kTBF$ ) from said one or more  
amplifiers (100,200) that comprises:  
a known Boltzman constant ( $k$ );  
20 a known bandwith ( $B$ ) of said noise power;  
a known noise figure of said noise power;  
a measured temperature ( $T$ ) of said receiver.
- 25 27. A receiver (1,2) according to any one of claims 20-26,  
c h a r a c t e r i s e d in that an output from the  
last one of said one or more amplifiers (200) in a chain  
is connected to an analog-digital-converter (400) for  
converting analog signals into digital signals.
- 30 28. A receiver (1,2) according to claim 26,  
c h a r a c t e r i s e d in that said gain ( $G$ ) of said  
received radio signal ( $S_i+N_i$ ) is estimated from said  
calibrating signal ( $N_a+N_i$ ) including said noise power  
( $kTBF$ ) when an output signal ( $S_{tot}$ ) is measured at least  
one output of said one or more amplifiers (100,200).

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29. A receiver (1,2) according to any one of claims 20-27, characterised in that said gain (G) of said received radio signal ( $S_i + N_i$ ) is estimated from said calibrating signal ( $N_a + N_i$ ) when an output signal ( $S_{tot}$ ) is measured at least one output of said one or more amplifiers (100,200)

30. A receiver (1,2) according to any one of claims 20-27, characterised in that said gain (G) of said received radio signal ( $S_i + N_i$ ) is estimated from said calibrating signal ( $N_a + N_i$ ) when an output signal ( $S_{tot}$ ) is measured after said analog-digital-converter (400).

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